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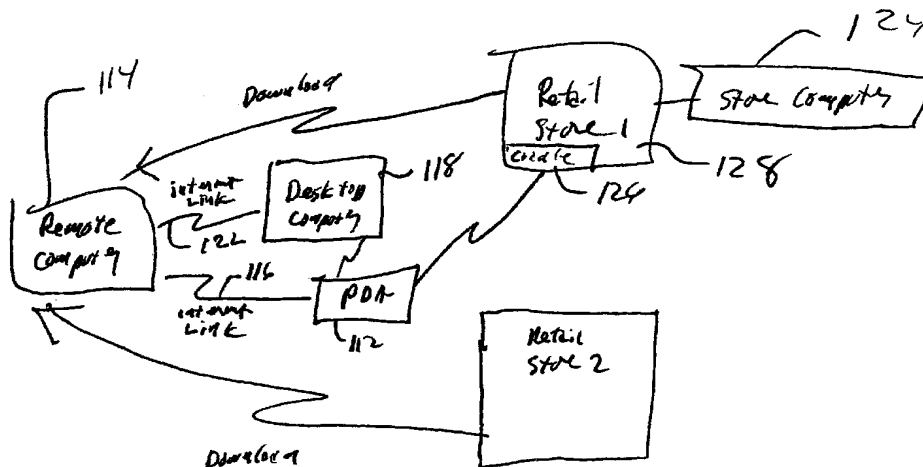
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(54) Title: SHOPPING LIST ORGANIZER APPARATUS AND METHOD



(57) Abstract: A personal digital assistant (PDA (112)) is used by a consumer for inputting identification of items desired by the consumer for accumulating a shopping list. During a shopping trip, the PDA (112) presents choices, offers, discounts corresponding to items in the shopping list to facilitate selection of a particular product corresponding to an item on the shopping list, preferably during a shopping trip, the shopping list is organized to facilitate shopping such as organizing an order of the location of items in the aisles of the store. Coupons, discounts or other offers may be presented to a consumer on the basis of items appearing on the shopping list, information about consumer purchasing history preferences, demographics and similar information. Payment or checkout procedures can be facilitated using the portable computing device (114, 118) by communicating frequent shopper number or other shopper identification information, credit or debit card information, coupon, discount or other offer information.

## SHOPPING LIST ORGANIZER APPARATUS AND METHOD

Cross-reference is made to Serial No. 60/154,006 "RETAIL LOCATION SHOPPING ASSISTANCE METHOD AND APPARATUS" (Attorney File No 3730-917) and to Serial No. 60/153,965 "PERSONALIZED WEB PAGE BASED ON MULTIPLE DATA SOURCES" (Attorney File No 3730-918) filed on September 15, 1999 both incorporated by reference.

The present invention relates to a device and process for assisting in the organization of purchasing decisions and activities and in particular to a portable or hand-held device which can receive and/or communicate information about bargains, offers, coupons, prices and the like for facilitating purchase decisions and/or comparison shopping.

### BACKGROUND

A number of portable computing devices can be used to store, reorder or otherwise organize and display lists, including shopping lists. In addition to so-called laptop computers, relatively small computers and other electronic devices, such as so-called "palm top, " wireless (including e.g. internet cell phones) and/or "personal digital assistant" (PDA) computers have recently become widespread. Many such computers can execute programs which include a facility to store and/or process lists, such as to-do lists, shopping lists, and the like. In some situations, such lists can be organized in various fashions such as by due dates, priorities and the like from a central data base (typically in accordance with dates or priorities manually input by the end user). While such programs are useful for numerous purposes, and could be used in connection with maintaining one or more shopping lists, such typical list processing programs leave many of the tasks which are, or desirably may be, performed in connection with shopping or purchasing, to be fully or substantially performed by the purchaser or end user, with little or no assistance from the program.

For example, even using a typical priority-based or due date-based list program, a purchaser, using typical previous approaches, receives little or no assistance in such tasks as price-based, availability-based, location-based or other comparison shopping, e.g., for selecting at which store or stores to make purchases and/or which brands to purchase.

With respect to grocery shopping, a purchaser typically receives little or no assistance from the program in connection with implementing dietary requirements or preferences or ingredient requirements or preferences (such as a shopper who needs or desires to purchase products which are low in, or free from, fats, sugar, salt and the like).

5           The shopper typically receives little or no assistance from typical list processing programs in taking greatest advantages of coupons, sales or other special offers, and, instead, typically must seek out information regarding such sales or offers, typically from various different sources, including electronic sources and print sources.

10           Furthermore, consumers typically receive little or no assistance from typical list processing programs in weighing different purchasing factors (such as weighing the sale price or other incentives from several different stores versus the expenditure of time in traveling to stores at various locations). Typical previous list processing programs provided little or no assistance in assisting the shopper in organization (e.g., time organization) of one or more shopping trips such as organizing the order and routes to  
15           two or more shops, and corresponding lists therefor, e.g., so as to maximize efficiency or ordering a shopping list within any particular store to reflect the physical layout of merchandise within the store (e.g., ordering the list in the same order as the aisles within which the merchandise can be found).

20           Accordingly, it would be useful to provide programming and procedures, particularly for implementation on PDAs or other portable computing devices which can increase the assistance afforded to a shopper in making or implementing shopping or purchase decisions, compared to the assistance available from typical list processing programs.

25           Although it might be possible to implement relatively more extensive data processing, display and/or data storage capacity on a physically larger computer such as a desktop computer or workstation computer, it would be particularly advantageous to provide users with shopping-facilitator input/output (I/O) actions which can be readily accessed at substantially any time, such as during normal daily activities including working and driving activities, when decisions about the need for purchasing items may  
30           occur, and/or during the shopping trip or activity, and accordingly would be useful to

provide at least some aspects of a shopping-facilitator program in a portable computer, particularly a hand-held computer such as a PDA.

Throughout the development of electronic computers, the capabilities of computers, particularly the capabilities for data storage and for rapidly performing  
5 lengthy and/or complex processes, have placed constraints on the types of programs that can be implemented in such computers. This has been no less true in the development of portable or PDA computers. Although, historically, data storage and computational capacity of computing devices, including portable and PDA computers, has increased dramatically, and can be expected to continue to increase, there are still limits on the  
10 computational ability and, especially data storage capacity, of smaller computers such as PDAs that impose substantial limits on their capabilities. Accordingly, it would be useful to provide programming and/or systems for use in implementing purchasing or shopping assistance capabilities for portable or PDA computers which can be implemented so as to place at least some of the data storage burden and/or computing burden on other  
15 computers or devices.

It is believed that, in general, a purchase facilitating program which is intended for implementation using one or more PDAs or other portable or mobile computers will find greatest use in the context of personal or family shopping. This is because many businesses perform shopping or purchases via purchase orders generated at a central  
20 facility and thus can be more readily accommodated by systems on non-portable computers such as desktop computers or workstations. Furthermore, business or company purchases are often less involved in manufacture or retail promotions such as sales, coupons, and the like. Nevertheless, although it is currently contemplated that the present invention, described below, will be particularly useful in the context of personal  
25 or family shopping, there is no theoretical reason why some or all features of the present invention cannot be used in connection with business or corporate purchases.

In many situations, both purchasing decisions and purchase or shopping activities occur in a multi-person context. Shopping for a family typically involves filling the purchase needs of or desires of several family members and purchasing often may be  
30 performed by any of multiple family members. Similarly, company purchasing can involve purchase requests from numerous personnel and purchases or purchase orders

from more than one employee. In such situations, there is a potential for the party making a purchase to fail to be aware of the needs or requests for items of various parties, and there is a potential for two purchasing parties to make duplicate purchases. Accordingly, it would be useful to provide a purchasing or shopping facilitator which can assist in coordinating the input to, and the shopping decisions based upon, purchase needs or desires from multiple parties.

Current list-processing programs, in addition to providing little or no assistance in connection with purchasers of goods or services have also generally fallen short of ideal performance from the point of view of sellers of goods or services, such as retailers, manufacturers, or service providers. Many retailers, manufacturers and service providers attempt to promote their goods or services by advertising various sales, offers, coupons and the like. Although these can be effective to a certain degree, there appears to be substantial room for improving the effectiveness of such promotions. In certain situations, promotions are offered or made at a point in time which may be too early, such as when audio, video or print promotions are presented in various media, typically while the consumer is watching television, reading a paper or magazine or listening to the radio, which is often well in advance of the time the purchaser is making a purchase decision, in the hopes that the purchaser will remember (or in the case of coupons, retain) the offer until such time as the purchaser is organizing a shopping trip. In other situations, the promotion is made or offered at a time which may be considered too late, such as after the purchase has been made (e.g., printing one or more coupons on the back of a grocery store receipt or, in the case of sales or offers displayed in the store, after the consumer has made up his or her shopping list). It is believed that enhancing the effectiveness of such promotions would be beneficial not only to the retailer, manufacturer or service provider, but also to the consumer who may be presented with a wider range of choices as well as an opportunity to take advantage of a wider range of promotion incentives. Accordingly, it would be useful to provide a shopping organizer which can facilitate and increase the effectiveness of retailer, manufacturer or service provider promotions.

In addition to loss of promotion effectiveness because of improper timing, there can be a less than optimal effectiveness of promotions because of improper targeting. Many promotions are distributed by mass media while only a small percentage of those

who receive the promotion fit the profile of the consumer to whom the promotion is directed. For example, there is little or no benefit to the manufacturer of compact disc (CD) recordings if promotions are distributed to consumers who have no CD players. Similarly, there is little benefit to a manufacturer of a soft drink in providing purchase incentives to a consumer who already purchases nothing but that particular brand of soft drink. Accordingly, it would be useful to provide a shopping organizer which permits promotional offers which facilitate the targeting of promotional offers.

Often, such targeting involves the use of and accumulation of information regarding the shopping habits, economic status, geographic location and similar information regarding a consumer. Although consumers may find some of the effects of such data accumulation to be beneficial (such as being sheltered from advertisements or promotions for goods or services in which the consumer has no interest), the privacy and other concerns of many consumers argue for the capability of a degree of control over the storage and dissemination of such information. Furthermore, a particular retailer, manufacturer or service provider may have an interest in limiting or controlling access to information about its customers (particularly access to such information by its competitors), especially if the retailer, manufacturer or service provider has expended resources or efforts in gathering such information. Accordingly, it would be useful to provide a system which can be implemented so as to give a consumer and/or seller a degree of control over storage and dissemination of information about the consumer.

A number of factors can enter into purchasing decisions, including factors such as price, quality, delivery time, store location, availability, selection and the like. Thus, there is a relatively large amount of information which is potentially of use to a consumer or purchaser in making purchasing decisions. On the other hand, some consumers may wish to limit the amount of information (e.g. relating to factors which are relatively less important to the consumer) lest purchase decisions become too time-consuming. Accordingly, it would be useful to provide a shopping facilitator which can be customized to limit the shopping choices or shopping list choices, e.g. on the basis of price range, ingredients, quality, store location, store hours, brand preferences, total number of brand choices for each item, product size or quantity for each item and the like.

## SUMMARY OF THE INVENTION

The present invention provides a method and apparatus for facilitating shopping or purchasing. In one aspect, a portable, mobile, wireless (including, e.g. an internet cell phone) and/or preferably hand-held computer, such as a personal digital assistant, can be used to facilitate entering items into (or otherwise creating) a shopping list, and for making a decision between two or more potential purchases with regard to an item on a shopping list on the basis of output information. As used herein the term "PDA" includes any of a number of types of personal electronic interactive devices, including without limitation, notebook computers, palm top computers, interactive electronic notepads or books, and generally includes devices that communicate over wires, cables or fibers, as well as those that communicate without wires cables or fibers, (i.e. wireless devices) such as by infrared or other freespace light communication, radio communication, using either terrestrial or satellite links or relays, cellular telephone (including cellular phone devices or systems that can provide internet access or "internet cellular phones"), networks such as local area networks, wide area networks or other communication systems and the like as will be clear to those of skill in the art after understanding the present invention. In one embodiment, the consumer enters items into the PDA (e.g. using a keyboard, handwriting or symbol recognition, voice recognition, or the like) as needs or desires are noted. The data can be stored either locally or in a central database (e.g via internet transmission.) The PDA can display or output information relating to various purchase options, such as different stores or other retail locations where the item can be purchased, different brands, colors, sizes, flavors, sales offers, coupons, discounts and the like available at two or more stores or for two or more products or brands, and the like. The user can make a selection among stores, brands, sizes, flavors, colors, and the like using such information. Preferably the PDA can provide an output (e.g. can print or display) a shopping list reflecting the choices made by the consumer and preferably organized with regard to the location of the store or stores selected by the consumer and/or location of items within the store or stores. In this way, the consumer has access to information pertinent to the purchase decisions at the time the shopping list is being finalized for use.

In one embodiment, the consumer uses the PDA in-store during the shopping trip. In one embodiment, the consumer couples his or her PDA either using a wireless connection capability of the PDA or by using a connector in the store, e.g. at the beginning of the shopping trip, for such purposes as receiving promotional offers for items on the shopping list, providing a shopping list organized with respect to the location of shopping list items within that particular store, and the like. In one embodiment, the consumer's PDA is coupled (in a wired or wireless fashion) to a store computer at the time of checkout, for purposes such as updating the consumer shopping list (e.g. deleting, from the shopping list, items that were purchased), facilitating checkout and/or coupon redemption (particularly redemption of coupons or offers that were personalized for this consumer or shopping trip), retrieving consumer information for storage in the retailer's (or other centralized) database and the like. In some embodiments, the PDA may be coupled (in a wired or wireless fashion) to other computers, such as via an Internet or other remote communication link to provide the PDA with access to current coupon, sale, promotion, store location, product information or similar information, e.g. in order to present the most recent information to the consumer when the consumer makes shopping list choices. In one embodiment, some or all of the data storage and/or data processing capability is provided at a remote site (i.e., as opposed internal storage, within the PDA) such as by storing information or providing data processing at a retailer's main computer, a remote computer with which the consumer has registered or to which the consumer subscribes (or otherwise has access) and the like.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 depicts a system involving multiple linked or linkable computers for facilitating shopping according to an embodiment of the present invention.

Fig. 2 is a flow chart depicting a shopping facilitation procedure according to an embodiment of the present invention.



## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

In the embodiment depicted in Fig. 1, a PDA 112 is configured for coupling to any or all of a plurality of other computers, such as a remote computer 114 either directly via an Internet 116 or other remote link, or indirectly via coupling to, e.g., a desktop computer 118 (e.g. by a physical connector such as a cable or fiber or using a wireless connection such as a radio or infrared (IR) link) which in turn may be coupled to a remote computer 114 (e.g. via an Internet or other remote link 122). As shown in Fig. 1, the PDA may also (or alternatively) be connected (in a wired or wireless fashion) to a retail store computer 124 such as by being coupled to a PDA cradle 126 located in a retail store 128. In one use, as shown in Fig. 2, a consumer will enter shopping list items 212 into the PDA 112. Although numerous methods of entering data can be used in the present invention, it is contemplated that, typically, a consumer will keep the PDA substantially or typically in his or her possession so that new items can be added to a shopping list as the consumer notices that items are needed or desired. Thus the consumer may add shopping list items while at home (e.g. while cooking, cleaning, in response to advertising and any other circumstances), while driving and/or at work. In some situations, the PDA may be configured to assist in the formation or maintenance of a shopping list such as by allowing the user to create a shopping list by selecting from displayed items. The items displayed for selection can be based on standard or common shopping list items, can be based on previous shopping history (such as suggesting the addition of "cola" if past history suggests the consumer typically buys cola every week) and/or can be influenced by the desires of retailers, manufacturers or service providers to promote certain items. In some embodiments, the shopping facilitator software is configured to suggest purchase items in addition to those that may have been entered by the consumer. For example, the device may suggest the purchase of a gift prior to various relative's birthdays (possibly by co-ordinating with a calendar application on the PDA). Although it is possible for the consumer to be presented with or to make choices regarding purchases at the time an item is entered into the list, it is contemplated that, during a list-building phase, typically the consumer will merely add items to the list, without making specific product choices at that time.

In one embodiment, creation of a shopping list can be facilitated by coordination with a menu and/or recipe database. For example, in one embodiment, a consumer may select a number of meals desired during the week and the shopping facilitator will determine, from the recipe database, what items need to be purchased in order to have the ingredients on hand necessary to prepare such meals.

When the consumer indicates a desire to make purchases and/or organize a shopping trip, the PDA 112 (or other computer such as desktop computer 118 having access to the current shopping list) can display to the consumer various choices for some or all items on the shopping list. For example, if during a previous time period the consumer had added "cola" to the shopping list 212, and the consumer has indicated that the shopping trip is to include grocery shopping (as opposed to, e.g., an exclusively hardware-item shopping trip), the computer, using downloaded information (obtained in a wired or wireless fashion), will display various cola purchase choices. In some embodiments, at the time the consumer indicates a desire to organize a shopping trip or purchase activity, it may be desirable to filter or edit the thus-far accumulated shopping list. For example, it may be desired to delete or postpone the purchase of certain items on the list. It may be desired to organize a shopping trip around only certain types of items (such as grocery items versus take-out or restaurant food versus hardware items). Such editing may be performed manually (such as by permitting the user to view the current items on the list and select certain items to delete or postpone) or may be performed or assisted by automatic procedures. For example, the PDA may be configured to automatically extract, from the current accumulated shopping list, only grocery items (which may be identified as such by the consumer, at the time of entry, and/or by a word recognition procedure).

In one embodiment, a shopping facilitator may be configured to facilitate prepared food purchases such as restaurant purchases, take-out food purchases, delivery food purchases and the like, such as by presenting choices based on restaurant location, delivery times and areas, type of cuisine, price range, discounts, coupons and the like.

In order for the consumer to be provided with current valid information to assist in making purchase decisions, information will be downloaded (in a wired or wireless fashion) for storage in and/or display via the PDA, including, for example, store

information, product information, promotional information and the like 214. The downloading can occur continuously (e.g. in the case of a wireless Internet link), periodically (such as using automatic dial-up of an Internet or other computer link) or other dial-up links. In one embodiment the PDA is configurable to automatically perform dial-up during night time hours or other times (to reduce or minimize connection costs or inconvenience) or on demand (such as when a consumer initiates a dial-up or other connection at the time the user chooses to make choices and organize the shopping list).

In one embodiment, downloaded information can include offering or notifying of events such as shows, concerts, plays, public meetings, or offers of services such as transportation services (plane tickets, subway tickets or passes and the like), communication services (long distance, phone services or calling cards, cellular telephone time, internet time and the like). Preferably, the shopping facilitator program, in addition to assisting in identifying concerts or similar events of interest, can provide assistance in purchasing admissions or tickets to such events such as by displaying seat availability and prices, and/or automatically performing ticket purchases (e.g. using stored credit card information). In one embodiment, the purchase of tickets results in the storing, on the PDA, of "virtual" or electronic admission tickets. Such electronic tickets are configured such that admission to this service or event is provided when the consumer uses his or her PDA to display or establish or communicate the electronic ticket information at the ticket gate and/or provides proper identification at the ticket or admission gate.

In one embodiment, the consumer downloads information from a remote site 114 which has been established for providing some or all pertinent information to assist the consumer in shopping decisions.

In some embodiments, the downloaded information may be coordinated with other applications or information on the PDA, such as a calendar application. For example, information to be downloaded can potentially include advertisements, events or offers relating to time-dependent events or items such as concert tickets. In one embodiment, in connection with advertising or offering a concert event, the shopping list application will coordinate with a calendar application to determine if the consumer

already has another engagement conflicting with the concert, of which the consumer should be made aware before offering the concert ticket.

Various options for funding such information-downloading operations are possible. In various embodiments, the information may be provided in return for a subscription payment or other payment by the consumer and/or may be provided at reduced or no cost to the consumer. In some situations, the service provided by the remote computer 114 may be funded by manufacturers, retailers, service providers and the like. The service may be provided without conditions (e.g. in the hope that information supplied by the retailer, manufacturer or service provider will suffice to persuade a consumer to make a desired purchase decision, even in the face of information provided by competitors at the same site) or may be funded by a particular manufacturer or group of manufacturers, retailers, service providers and the like with the understanding that the remote computer will provide information which is limited or exclusive to such manufacturers, retailers or service providers (i.e., will exclude information from competitive manufacturers, retailers or service providers) or will provide the funding entities with the most prominent displays (e.g. positioning the funding entities as the first choice among a consumer's list of choices or other advertising or marketing advantages). Other funding options will be apparent to those skilled in the art.

It is also possible for the PDA to download some or all information (in a wired or wireless fashion) from the store computer 124 of a particular retail location, service provider or the like. Further, it is possible for the PDA to be configured to connect to numerous remote computers for downloading pertinent information. For example, the PDA (or a coupled computer such as desktop computer 118) can be provided with a configurable so-called software "agent" which is configured to download information from various sites according to the preferences of the consumer (or, in some cases, the preferences of a manufacturer, retailer or service provider).

In any case, the PDA obtains access to various types of information that can be used to assist the consumer in making purchase choices. Although it is possible to store the pertinent information in the memory on-board a PDA, in situations where large amounts of on-board memory may not be available, some or all information may be

stored (using wired or wireless communication) in any or all of various remote computers 118, 114, 124 in exclusive, duplicative or distributed fashion.

In addition to the various methods for funding provision of information, there are also various ways in which the PDA or similar hardware can be funded. In one scenario, the PDAs may be provided at reduced, or no cost, to consumers by a retailer, manufacturer or service provider (or groups thereof). In another scheme, PDAs may be provided by an entity at reduced, or no cost, to consumers but provided with (preferably non-modifiable) programming which permits the entity to affect the manner in which advertising and/or offers are displayed or otherwise provided to the consumer. Thus, the entity can, in this scenario, obtain revenues by selling advertising or other marketing items to manufacturers, retailers, or service providers which will be shown to users of the PDAs distributed by such entity. In yet another scenario, PDAs may be purchased, at full price, by consumers who may wish to have shopping assistance device which is not skewed toward any particular manufacturer, retailer, or service provider (or groups thereof). In another scenario, PDAs may be rented to consumers. Such rental arrangements may be coupled with a guarantee of (or offset in the amount of) the monthly savings the consumer can expect to achieve by use of the PDA. Various other ways for financing PDAs and similar hardware will be understood by those of skill in the art after understanding the present invention.

Different embodiments of the present invention can result in various kinds of choice displays for the consumer. The particular choice display provided to the computer, among the various possibilities for choice displays, can be selected in numerous fashions. In one embodiment, the PDA 112 may be programmed or configured so that only a single type of choice display is available. For example, in one embodiment, a particular retailer (or retail chain) 128 may distribute PDAs 112 to some or all of its customers on a reduced-cost or free basis but may configure such distributed PDA such that those PDAs display only choices available at the retail location of that particular retail store or chain. It is also possible for a group of retail stores or chains (either all of the same type, e.g. a plurality of grocery stores) or a range of store types (such as a grocery chain, a hardware chain, a drugstore chain and the like) to form a group distributing PDAs at low or no cost to their customers and, in this case, the

distributing chains might distribute PDAs which are configured to present choices only for those chains or stores in the group. It is also possible, e.g. for goodwill purposes or other purposes, for a chain to distribute PDAs at reduced or low cost (or at full cost) which are not limited or restricted, in the choice display, to a particular store or chain.

5 In another embodiment, the consumer may be given the option to affect the choice display. For example, a consumer may be permitted to specify that he or she wishes to see only those choices available at a particular store or group of stores, only those choices available within a certain geographic area, within a certain price range, and the like. In some configurations, the consumer may be permitted to specify that he or she wishes to  
10 see only a specified number of choices such as the three least expensive choice, the three choices with the best coupon or promotional offers and the like. In one embodiment, the consumer may be permitted to specify that the consumer wishes to include only one store (or only a specified number of stores) in the shopping trip and wishes to purchase items at the store (or group of stores) so as to minimize the total cost of items on the shopping  
15 list.

In one embodiment, discounts or other offers may be provided with a time limit, executed by or in connection with the PDA and/or store computer. For example, when a consumer enters a store and optionally couples a PDA to an in-store computer (in a wired or wireless fashion) , it may be desired to present one or more discounts or offers  
20 intended to be used during the current shopping trip such as by making an offer which is valid for, e.g. 90 minutes and which will be erased from (or deactivated in) the PDA after that time.

Accordingly, in regard to the example above, involving a shopping list which includes cola, the consumer might be presented with three cola choices: a 6-pack of  
25 Brand X, a 6-pack of Brand Y or a 12-pack of Brand Y, with the price per ounce, coupons or other promotions available and the like displayed, and, where applicable, the store locations where the products are available. The consumer will make a selection among these choices (or based wholly or partly on promotions, coupons, discounts offers or the like) which will be received by the PDA 112 or other computer 218. For  
30 example, offers (preferably, but not necessarily, personalized and/or targeted to particular consumers or households) may be sent by email ("e-flyer") or similar internet-

based communications. In some embodiments, email messages may have one or more links to web sites or other internet facilities for shopping assistance. After viewing choices, promotions or offers, and making selections for various items on the shopping list, the computer 112 or 118 can provide a shopping list, e.g., printed or displayed, preferably displayable on the PDA 112, 222.

Preferably, the shopping list is organized to assist the shopper such as providing separate lists for each store where items are to be purchased during the shopping trip. Preferably, for any given store, the shopping list is organized in the order the items are located within the store, such as in the order of their aisle location within the store. Information about location of items within stores can be provided to the PDA 112 or desktop computer 118 (in a wired or wireless fashion) as part of the download procedure described above or can be provided, e.g. to the PDA by downloading to the PDA directly from the store computer 124, e.g. at the time the consumer enters the store.

In some embodiments, the discounts, coupons or other offers, advertising and the like which are downloaded for presenting to the consumer are designed or selected at least in part in accordance with certain characteristics of the consumer. For example, it may be preferred to present certain offers or advertising only to consumers who have certain types of purchase histories (e.g. who typically make at least a threshold monthly dollar amount of purchases, either of a particular type or total purchases), to consumers to have a history of buying certain types of products or certain brands, to consumers who have certain demographic characteristics (geographic location, income, family size and so forth), to consumers who have indicated certain preferences or desires (sizes, colors, flavors and the like) and so forth. Such information about a consumer can be acquired in various fashions. In one embodiment, a consumer is offered an opportunity to enter data into the PDA (e.g. in response to "questionnaires" describing preferences, purchase history, demographic information and similar information). Alternatively, or additionally, the PDA may store (or communicate to another computer such as a store computer and the like, for storage therein) purchase history information as a result of executed or processed shopping lists or transactions performed using the PDA. The preference, demographic or purchase history information can also be obtained from consumer information entities and downloaded, e.g. using download techniques similar

to those described above. Provision of such targeted advertising or offers can be of benefit to both consumers (who can benefit from the most beneficial coupons and offers and are relieved of many advertisements for products or services in which the consumer has little interest), and manufacturers, retailers or service providers (who can benefit by reducing expenditure of marketing resources on non-targeted consumers).

In many situations, the consumer and/or retailer, manufacturer, service provider or other seller may have some sensitivity to the manner in which sales history, demographic or other information about the customer is disseminated or used. Preferably, the system of the present invention can facilitate a degree of control over such user dissemination. For example, when it is desired to provide the customer a degree of control, the customer is preferably provided with an option to configure the PDA to prevent or limit the downloading of certain information. For example, when the consumer has entered information about certain preferences (colors, flavors, sizes and the like, e.g. for use in building, maintaining or organizing shopping lists) the consumer may be permitted to block or prevent the downloading of such information to any remote computer or to select categories for remote computers, or the consumer may be permitted to permit or allow downloading of some types of information while blocking others, such as downloading preference information while blocking downloading of demographic information.

Although it is contemplated the PDA will be carried, by the consumer, during the shopping trip, it is also possible, as a result, of the organization of the shopping trip list, to output a printed list for use during the shopping trip and/or to provide the shopping list to a store or an independent shopper selecting items, based on the list for purchase (and delivery to the consumer).

In addition to (or in place of) advertising or offers made to the consumer at the time the shopping trip is organized, the PDA can be used to provide advertising or offers to a consumer during the shopping trip. In one embodiment, a consumer may be provided with the opportunity to couple a PDA (in a wired or wireless fashion) to an in-store computer (such as by placing it in an in-store coupling "cradle" 126), e.g. at the beginning of a visit to the store whereupon the in-store computer can download information for displaying various offers, to the consumer, on the PDA. These offers or



advertisements can be displayed immediately, continuously, on a rotating basis, at periodic or random times during the shopping trip, or can be based on the movement, pauses, or location of the consumer within the store (e.g. sensed using an electronic locator system based on the location of the PDA), information to permit such in-store displays of advertising or offers can, if desired, be related to some or all items on the shopping list and/or can be related to information about customer characteristics such as preferences, purchase history, demographic information and the like.

After the consumer has used the shopping list and/or PDA for selecting items in the store, the PDA can also be used in connection with the checkout or payment procedure. For example, when one or more coupons or offers have been created specific to a particular consumer (or limited to a select group of consumers) the information about such offers should be taken into account when determining the amount due. Furthermore, when offers were provided having an expiration time or date, the validity of the offers should be verified when calculating the amount due. These items can be accomplished or facilitated by storing information pertinent to such offers in the PDA for use during the checkout procedure. In addition to coupon information, other information which can be stored in the PDA, for use during the checkout procedure, includes information such as customer identification numbers ("frequent shopper" numbers), credit card information (e.g. if the consumer wishes to make the purchase using a credit card or debit card) and the like.

In order for such information, stored in the PDA, to be used during the checkout procedure, information from the PDA should be provided to the store computer or checkout computer. In one embodiment, it would be possible to provide one or more PDA cradles 126 at each checkout stand. However, this procedure might involve relatively high hardware costs and may involve making modifications to the store's checkout software which could be expensive and/or otherwise unacceptable. It would, of course, be possible to display the information in character form, on the PDA screen and permit the clerk to manually enter the information. However, this would involve a time consuming process. Accordingly, in one embodiment of the invention, information, e.g. for use in the checkout or payment procedure, is transferred to the checkout or store computer automatically by displaying bar codes (or similar scannable codes) on the PDA

screen which are scanned by the store point of sale (POS) bar code scanners. In one embodiment, the PDA screen is used for displaying bar codes in accordance with bar coding systems commonly used for printed coupons and/or universal product code (UPC) standards. Since store checkout software is often already configured for scanning printed coupons, this feature can be implemented with little or no reprogramming of store software. Similarly, many stores are already configured to scan and receive bar codes indicative of customer identification information ("frequent shopper" number) so that this type of information can be input with little or no modification of store software. In another embodiment, a consumer (who may not be previously registered as a frequent shopper with the store) may couple to (or otherwise interact with) the store computer (in a wired or wireless fashion), e.g. at the beginning of the shopping trip (e.g. via the cradle 126 as described above) and, at that time, receive a (possibly temporary) identification number (possibly linked to the customer's credit card or other information downloaded to the store computer via the cradle link 126). The number may be stored in the PDA, for use during check out (as described below) or may be printed, e.g. in barcode format, for scanning or other entry, for use at checkout. Then, at the time of checkout, the (possibly temporary) identification number can be entered into the POS computer via scanning a barcode (displayed on the PDA screen or in printed form) containing the "temporary" identification number, for facilitating the transaction (e.g. charging to the customer's credit card, if desired, or storing the customer's telephone number for notification of the receipt of a back-ordered item or the like) at the time of checkout. In another embodiment, a temporary number is coupled to a set or suite of discounts or offers available to that consumer such that, at check-out, upon scanning-in a bar code (displayed on the PDA, or printed-out at a kiosk) corresponding to that number the entire suite of offers available to the consumer can be applied, as appropriate.

In one embodiment, family shopping lists can be coordinated by a replication process in which, each time a family member's PDA is coupled to a website computer, store computer or other central computer, all new items added by that family member are uploaded to the central site (in a wired or wireless fashion) and a new augmented shopping list (including items input by all family members, and also modified to reflect

any purchases of shopping list items which have been made by other family members) is downloaded (in a wired or wireless fashion) to the individual's PDA.

Preferably, at the time of checkout, items on the shopping list which have been purchased are removed from the shopping list (or marked as having been purchased) so that at the end of the shopping trip, the "current" shopping list reflects only items currently needed or desired by the consumer. Preferably, the items deleted or marked as "purchased" are similarly deleted or marked in the PDA's of family members of the same purchasing family, e.g. using a replication procedure such as that described above.

In light of the above description, a number of advantages of the present invention can be seen. The present invention can assist a consumer in making purchasing decisions, e.g. by facilitating the creation and maintenance of shopping lists. The present invention provides for a PDA or other portable computing and/or display device which implements some or all of the shopping facilitator features but which is preferably sufficiently portable that it can be substantially constantly available to the consumer for entry of items onto the shopping list, as needs or ideas arise and can be available to the consumer during the shopping trip to facilitate shopping, facilitate taking advantage of offers, coupons, and the like. Purchasing decisions can be facilitated by presenting the consumer with a choice of among a variety of purchasing options or choices for some or all items on a shopping list. Purchase choices can reflect discounts, coupons or other offers available for various purchase items. Shopping lists can be organized to reflect the location of the stores and/or the location of items within the store.

A number of variations and modifications of the present invention can be used. It is possible to use some features of the invention without using others. For example, it is possible to use the present invention for organizing a shopping list and providing appropriate corresponding discounts or other offers without using the PDA for certain checkout procedures such as for accomplishing a credit card charge. Although an embodiment was described in which a PDA is placed in a cradle in order to couple to an in-store computer, the PDA may communicate with an in-store computer in other fashions, such as by a radio or other wireless link. Although it has been described above how the PDA can be used in conjunction with a frequent shopper number (e.g. including frequent shopper programs of the type in which accumulated purchase totals or points

count toward purchase discounts or similar benefits at a particular retailer or chain), it is also possible to use the PDA to implement or facilitate a “meta” frequent shopper program for tracking and accumulating points valid across several different retailers (e.g. by storing points at a website or other central location). If desired, frequent shopper points or “meta” frequent shopper points (or other accumulatable point programs) can be configured to award points based on use of the PDA and/or shopping assistance program. Preferably information stored on the PDA is, from time to time, backed up by replicating on another computer such as a desktop or other personal computer, website computer, store computer or the like.

The present invention, in various embodiments, includes components, methods, processes, systems and/or apparatus substantially as depicted and described herein, including various embodiments, subcombinations, and subsets thereof. Those of skill in the art will understand how to make and use the present invention after understanding the present disclosure. The present invention, in various embodiments, includes providing devices and processes in the absence of items not depicted and/or described herein or in various embodiments hereof, including in the absence of such items as may have been used in previous devices or processes, e.g. for improving performance, achieving ease and/or reducing cost of implementation.

The foregoing discussion of the invention has been presented for purposes of illustration and description. The foregoing is not intended to limit the invention to the form or forms disclosed herein. Although the description of the invention has included description of one or more embodiments and certain variations and modifications, other variations and modifications are within the scope of the invention, e.g. as may be within the skill and knowledge of those in the art, after understanding the present disclosure. It is intended to obtain rights which include alternative embodiments to the extent permitted, including alternate, +interchangable and/or equivalent structures, functions, ranges or steps to those claimed, whether or not such alternate, interchangeable and/or equivalent structures, functions, ranges or steps are disclosed herein, and without intending to publicly dedicate any patentable subject matter.

What is claimed is:

1. A computer implemented process for facilitating purchase activities comprising:

providing a portable computer including at least a first input means and a first  
5 output means;

inputting information, via said input means, for identifying items to be included  
in a shopping list;

presenting at least first and second choices for at least one of said items on said  
shopping list to said consumer;

10 receiving input from said consumer selecting between at least said first and  
second options to provide a selected option; and

preparing a shopping list including at least said selected item.

2. A process as claimed in claim 1 wherein said portable computer provides  
access to a central database.

15 3. A process as claimed in claim 2 wherein said access to a central database  
is internet access.

4. A process as claimed in claim 1 wherein said portable computer is  
selected from among a personal digital assistant computer, a notebook computer, a  
palmtop computer or an internet cellular phone.

20 5. A process as claimed in claim 1 wherein said step of receiving is  
performed using said portable computer.

6. A process as claimed in claim 1 wherein said step of receiving is  
performed using a computer different from said portable computer.

25 7. A process as claimed in claim 1 wherein said computer includes at least  
a first wireless communications facility.

8. A process as claimed in claim 1 wherein said step of presenting at least  
first and second choices includes sending email messages for receipt by said consumer.

9. A process as claimed in claim 1 wherein said consumer selects among at  
least one of:

30 a plurality of brands;

a plurality of sizes;

a plurality of flavors;  
a plurality of colors;  
a plurality of stores;  
a plurality of sales offers; and  
5 a plurality of coupons.

10. A process as claimed in claim 9 wherein at least one of said offers is offers  
is sent to a consumer sent by email .

11. A process as claimed in claim 1 wherein said consumer makes at least a  
first selection, using said portable computer, while said consumer is in a retail store.

10 12. A process as claimed in claim 1 further comprising coupling said portable  
computer to a store computer for downloading at least first information from said store  
computer to said portable computer.

13. A process as claimed in claim 12 wherein said step of coupling is  
performed using an internet connection.

15 14. A process as claimed in claim 1 further comprising coupling said portable  
computer to a second computer, different from a store computer, for downloading at  
least first information from said second computer to said portable computer.

15. A process as claimed in claim 14 wherein said step of coupling is  
performed using an internet connection.

20 16. A process as claimed in claim 12 wherein said first information includes  
at least one of:

product information;  
location information;  
sale information;  
25 discount information; and  
coupon information;  
concert information;  
transportation information;  
communication information.

30 17. A process as claimed in claim 12 wherein said first information is based,  
at least in part, on previous purchase information.

18. A process as claimed in claim 12 wherein said first information obtained, at least in part, from a recipe database.

19. A process as claimed in claim 12 wherein said first information is based, at least in part, on a number of servings desired.

5 20. A process as claimed in claim 12 wherein said first information is based, at least in part, on stored dietary restrictions or preferences of said consumer.

21. A process as claimed in claim 1 wherein said choices which are presented are only choices which are available at a particular retail store or chain.

22. A process as claimed in claim 1 wherein said choices which are presented  
10 are limited or arranged to reflect said consumer's selection of at least one of:  
a particular store or chain;  
a geographic region; or  
a price range.

23. A process as claimed in claim 12 wherein said first information includes  
15 personalized information, personalized to said consumer such that said personalized information is not made available to at least one other consumer.

24. A process as claimed in claim 12 wherein said coupling includes using a wireless communications facility in said portable computer.

25. A process as claimed in claim 1 further comprising coupling said portable  
20 computer to a store computer for uploading at least first information from said portable computer to said store computer.

26. A process as claimed in claim 25 wherein said step of coupling is performed using an internet connection.

27. A process as claimed in claim 1 further comprising coupling said portable  
25 computer to a second computer, different from said store computer for uploading at least first information from said portable computer to said second computer.

28. A process as claimed in claim 27 wherein said step of coupling is performed using an internet connection.

29. A process as claimed in claim 25 wherein said first information includes  
30 at least one of:  
information identifying said consumer;

information identifying a household;

information identifying a frequent shopper account;

30. A process as claimed in claim 1 further comprising:

displaying, on said portable computer, information related to performance,

5 including seat availability and pricing;

purchasing at least a first ticket, using said portable computer.

31. Apparatus for facilitating purchase activities comprising:

a portable computer;

first input means, coupled to said portable computer, for inputting information,

10 for identifying items to be included in a shopping list;

first output means, coupled to said computer, for presenting at least first and second choices for at least one of said items on said shopping list to said consumer;

means for receiving input from said consumer selecting between at least said first and second options to provide a selected option; and

15 program means for preparing a shopping list including at least said selected item.

32. Apparatus as claimed in claim 31 wherein said portable computer is selected from among a personal digital assistant computer, a notebook computer, a palmtop computer.

20 33. Apparatus as claimed in claim 31 wherein said computer includes at least a first wireless communications facility.

34. Apparatus as claimed in claim 31 further comprising means for coupling said portable computer to a store computer for downloading at least first information from said store computer to said portable computer.

25 35. A process as claimed in claim 34 wherein said first information includes at least one of:

product information;

location information;

sale information;

discount information; and

30 coupon information;

concert information;



transportation information;  
communication information.

36. Apparatus as claimed in claim 34 wherein said first information includes  
personalized information, personalized to said consumer such that said personalized  
5 information is not made available to at least one other consumer.

37. Apparatus as claimed in claim 31 further comprising means for coupling  
said portable computer to a store computer for uploading at least first information from  
said portable computer to said store computer.

38. Apparatus as claimed in claim 37 wherein said first information includes  
10 at least one of:

information identifying said consumer;  
information identifying a household;  
information identifying a frequent shopper account;

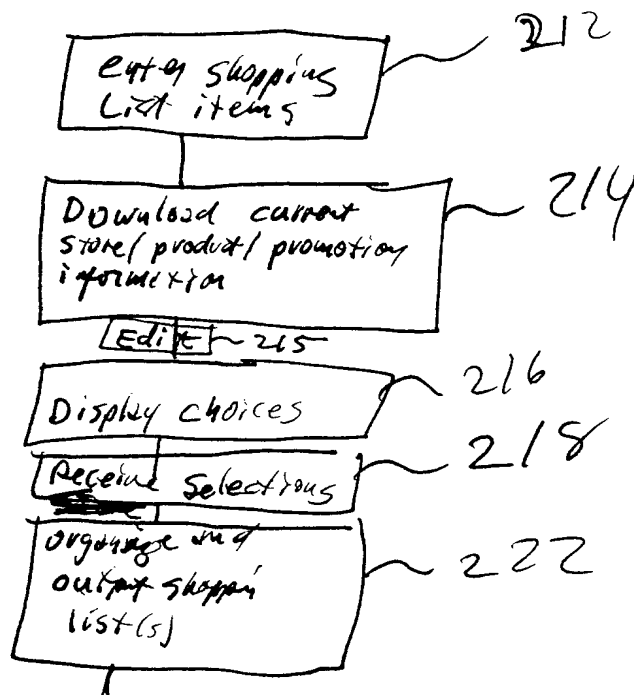
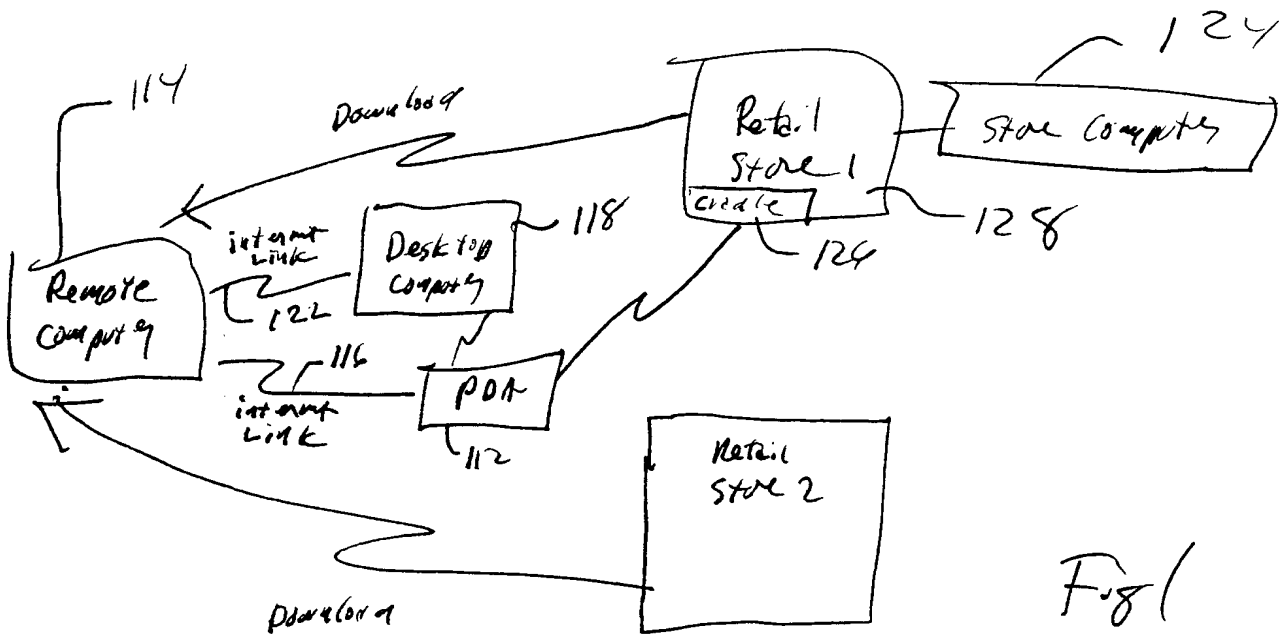


Fig 2

## INTERNATIONAL SEARCH REPORT

 International application No.  
 PCT/US00/25367

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC(7) : G06F 17/60 US CL : 705/10 According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) U.S. : 705/10, 12, 20, 22, 26, 27, 36 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Please See Extra Sheet. Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) Please See Extra Sheet.		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,918,213 A (BERNARD et al.) 29 June 1999, the abstract, the background, the summary of the invention, and col.33 lines 4-15, col.45 lines 50-60, col.50 lines 15-18, claims 7, 21, 38.	1-38
Y	US 5,873,069 A (REUHL et al.) 16 February 1999, the abstract, the background of the invention, claims 1, 2, 7, 10, 13, 14, 16-19, and col.14 lines 5-16, col.15 line 66 to col.16 line 4, col.16 lines 5-13, col.17 lines 30-62.	1-38
Y	US 5,937,391 A (IKEDA et al.) 10 August 1999, the summary of the invention, and col.2 lines 51-64, col.9 lines 3-5, col.4 lines 3-14, col.10 lines 31-46.	1-38
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
*	Special categories of cited documents:	
"A"	document defining the general state of the art which is not considered to be of particular relevance	"T"
"E"	earlier document published on or after the international filing date	"X"
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"
"O"	document referring to an oral disclosure, use, exhibition or other means	"&"
"P"	document published prior to the international filing date but later than the priority date claimed	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
		document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
		document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
		document member of the same patent family
Date of the actual completion of the international search	Date of mailing of the international search report	
17 NOVEMBER 2000	02 JAN 2001	
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer  CUONG H. NGUYEN <i>James R. Matthews</i> Telephone No. (703) 305-4553	

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US00/25367

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,544,040 A (GERBAULET) 06 August 1996, the abstract, the summary of the invention, and col.3 lines 1-33, col.4 lines 32-55, claims 1-2, 9.	1-38
Y	US 5,227,874 A (VON KOHORN) 13 July 1993, the abstract and the summary of the invention; col.81 line 61 to col.82 line 20, col.86 line 67 to col.87 line 18, claim 20.	1-38
A	US RE34915 (NICHTBERGER et al.) 25 April 1995, the abstract and the summary of the invention.	1-38
A	US 5,664,110 A (GREEN et al.) 02 September 1997, the abstract, and the backgrounds of the invention.	1-38
A	US 5,857,175 A (DAY et al.) 05 January 1999, the abstract and the summary of the invention.	1-38

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US00/25367

## B. FIELDS SEARCHED

Documentation other than minimum documentation that are included in the fields searched:

Microsoft Press Computer Dictionary, 3rd edition

Van Nostrand's Scientific Encyclopedia, 6th edition

Downes et al., Dictionary of finance and investment terms, 5th edition, 1998.

## B. FIELDS SEARCHED

Electronic data bases consulted (Name of data base and where practicable terms used):

WEST2.0, DIALOG CLASSIC, WORLD-WIDE-WEB

search terms: process, facilitate, purchase, computer, information, choice, selection, option, consumer, shopping list, internet, wireless communication, email, input, send, transmit, brand, size, flavor, color, store, sales offer, coupon, present, location, discount, concert information, product information, account, household, transportation, identify